

Preventing Gasoline Burn Injuries

A Campaign Kit for Burn Awareness Week 2001

—PUBLIC EDUCATION MATERIALS—

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The following materials can be copied for distribution in your communities as part of your own burn and fire prevention efforts. Please feel free to add your own local contact information.

- Gasoline Safety: *Preventing Gasoline Burn Injuries*
- Carburetor Priming and Burn Injuries
- Portable Gasoline Containers and Safety Alert
- Emergency Care for Burns
- Newsletter (this can be copied on 11"x17" paper and folded into newsletter format)

Gasoline Safety: *Preventing Gasoline Burn Injuries*



Gasoline is an extremely flammable liquid and vapor!

Gasoline is readily available and routinely used in most households. In spite of the routine use of gasoline, many people are unaware of or unappreciative of the dangers of gasoline. Gasoline is dangerous because it is highly volatile—**the fumes are capable of ignition up to 12 feet away from a pooled source.** This inherent danger is further multiplied by its explosive potential. Flammables burn at close to room temperature (100 degrees F), when they are near a spark, flame, or even static electricity. It can float on water and may spread long distances, making ignition and flash back possible. **Gasoline vapor is highly explosive and may ignite as a "fireball" with a temperature of 15,000 degrees F.**

Two physical properties explain why gasoline is significantly more hazardous than other flammable liquids found in the home.

1. Flash point—the minimum temperature at which the liquid will give off sufficient vapor to form an ignitable mixture with air.
2. Vapor density—ratio of density of vapor to the density of air. Substances with a vapor density greater than 1 are heavier than air and tend to accumulate in low or enclosed spaces.

Substance	Class.	Flash Point	Vapor Density**
Gasoline	Flammable Liquid	-45° F.	3-4
Propane	Flammable Liquid	-156° F.	1.56 @ 32° F.
Ethanol	Flammable Liquid	55° F.	1.6
Methanol	Flammable Liquid	52° F.	1.1
Turpentine	Flammable Liquid	95° F.	4.8
Kerosene	Combustible Liquid	100° F.	4.5
Diesel Fuel	Combustible Liquid	125° F.	>1
Safety Solvent	Combustible Liquid	100-140° F.	4.8
Paint Thinner	Combustible Liquid	105° F.	4.9



Gasoline—Flammable

Low Flashpoint + High Vapor Density

Kerosene and Diesel Fuel

Flashpoint >100 degrees F., so it is termed **Combustible** rather than flammable

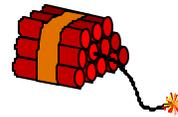
Gasoline produces ignitable vapors that are 3 to 4 times heavier than air and can travel for great distances along the ground. Gas vapors tend to accumulate in low or enclosed spaces. These vapors then can be ignited by a nearby open flame, such as a pilot light of a water heater.

Gasoline is a fuel that is easily available and widely in use today. Most households have a can of gas in the shed or basement for domestic use. Gasoline causes a significant number of burn injuries each year and, according to the USFA, there are nearly 500 civilian deaths each year from fires in which gasoline was the type of material first ignited.



The vast majority of gasoline-related burn injuries and deaths involve males—mostly under the age of 45—and occur between the hours of 8 a.m. and 8 p.m.

 **1 gallon of gasoline = 20 sticks of dynamite!**



Two simple rules regarding gasoline:

- 1. Gasoline has only ONE function: To fuel an engine.
Never use gasoline as a cleaning fluid or solvent.**
- 2. Gasoline should never be used or stored indoors or in close proximity to sources of heat or flame.**

Gasoline Safety

- ⚠ **Never use gasoline around a flame source.** Be particularly aware of sources such as matches, lighters, cigarettes and pilot lights on stoves and water heaters.
- ⚠ **Only use gasoline outdoors** or in well-ventilated areas.
- ⚠ Start charcoal grills with fuels labeled as charcoal starter fluid—**never use gasoline.**
- ⚠ Running engines on gasoline-powered equipment such as mowers can spark and cause ignition of the gasoline. **Fill the tanks prior to use. Refuel with the engine turned off and cool.**
- ⚠ **If you are transporting gasoline in a car, keep the container in the trunk and keep the trunk lid ajar for ventilation.**
- ⚠ **Never siphon gasoline by mouth.** It can be fatal if swallowed.
- ⚠ **If gasoline is spilled on your clothes,** remove them immediately. Place clothing outdoors for several days before washing and drying so that gasoline vapors can evaporate.



- ⚠ **Always keep the minimum amount of gas required** (generally no more than a gallon).
- ⚠ **If gasoline is swallowed, do not induce vomiting.** Seek medical attention immediately.



Common causes of gasoline burn injuries:

- ⊗ Starting or accelerating a fire (bonfire, trash, brush, outdoor fire, etc.)
- ⊗ Improper storage
- ⊗ Carburetor priming
- ⊗ Fumes near an open flame
- ⊗ Motor vehicle collision (MVC)
- ⊗ Refueling engine
- ⊗ Car or boat repair
- ⊗ "Playing" with gas
- ⊗ Farm work
- ⊗ Industrial activity
- ⊗ Sniffing
- ⊗ Suicide/arson/murder

Gasoline storage

-  **Always store gasoline containers in a cool, well-ventilated area.** Keep them away from any source of heat or sparks, such as a water heater, electric motor or car engine.
-  If you must store gasoline, do so only in well-ventilated areas away from the house (e.g, a garage or shed). **Never store gasoline in the house.**
-  Always store gas in **approved safety containers.**
-  **Gasoline should always be tightly sealed.** Seal both the spouts on the container and the vent.
-  **Never use glass or plastic bottles for gasoline storage.**
-  Keep gasoline locked up when not in use. **Always keep gasoline out of the reach of children.**

Carburetor Priming and Burn Injuries

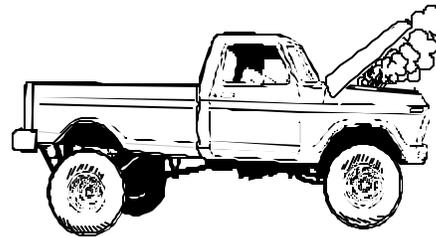


Accidents involving gasoline are a major cause of thermal burns in the U.S. Thousands of people visit hospital emergency rooms each year for treatment of gasoline-related burns. These accidents are often associated with careless use (misuse) of gasoline. Most accidents occur in the summer months, due to an increased use of gasoline for farming, yard work, and recreational purposes (e.g., boating). A lack of understanding of the explosive nature of gasoline by the general public contributes to both its improper storage and to its misuse as a solvent, engine primer, or fire starter. Gasoline burns decrease markedly in winter months, except for burns associated with carburetor priming to start cars.

Carburetor Burns—A Preventable Injury that Occurs in Daily Practice!

A relatively common cause of burn injuries involves pouring gas into a carburetor in an attempt to start a car. When a vehicle runs out of fuel, an airlock can develop in the fuel line between a newly filled gas tank and the carburetor. To provide an adequate fuel/air mixture, gas may be placed directly into the carburetor to prime the engine.

Priming carburetors is a dangerous and unnecessary practice and can produce explosion or fire!



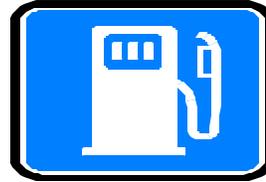
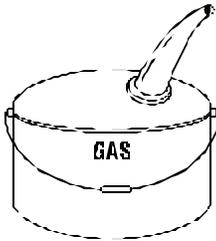
Explosions may occur by 3 mechanisms:

1. Contact of the gasoline or its vapors with hot metal (i.e., the car's engine)
2. Gasoline ignition caused by an electrical spark from the electrical system of the automobile
3. Ignition due to excessive gasoline in the intake manifold, causing backfire

Prevention education should be aimed at driver education and auto repair classes.

Backfires and explosions can cause burns. The occurrence of these injuries is often underestimated since many are small flash burns. Typically, the burns occur to the face, neck and arms. This type of injury is most common in young adult males.

Portable Gasoline Containers - Safety Alert



Did you know . . . that fires have resulted from filling metal portable gasoline containers (gas cans) in the back of pick-up trucks while the containers were resting on plastic bed liners, or in vehicles with carpeted or rubber-matter surfaces?

These fires result from the buildup of static electricity. The insulating effect of bed liners, carpeting or rubber mats prevents the static charge generated by gasoline flowing into containers from grounding. The discharge of the buildup to the grounded gasoline dispenser nozzle may cause a spark and ignite the gasoline. Both ungrounded metal (most hazardous) and plastic gas containers have been involved in these incidents.

To minimize the possibility of a fire when dispensing gasoline into a portable can:

- ❑ Use only containers that have been listed, labeled or approved for gasoline.
- ❑ Do not dispense gasoline into a portable gasoline container while it is located inside a vehicle, trunk, or pick-up truck bed. Make sure the container is stable and positioned on the concrete or asphalt prior to dispensing gasoline.
- ❑ When placing the gasoline container on the ground surface, make sure it is positioned away from other vehicles, people and moving traffic.
- ❑ Use caution when dispensing the gasoline from the nozzle. Make sure the nozzle remains in the gasoline container until dispensing is complete.
- ❑ Avoid using nozzle latch or hold-open devices when filling a gasoline container.
- ❑ Avoid smoking when dispensing gasoline into containers.

Emergency Care for Burns

❖ Stop the Burning Process

Remove all diapers and clothing from around the burn area—these will retain heat, increasing the damage to the skin. If material is adherent (stuck) to the skin, cool the area with cool water and seek medical attention. Jewelry and metal, such as belt buckles and zippers, also need to be removed.

❖ Run cool—not cold—water over the burn area for a few minutes.

- **Do not** apply ice to the burn—ice can make the burn worse.
- **Do not** apply creams, ointments, or salves.
- **Do not** break any blisters until seen by a physician.

❖ Cover with a clean, dry cloth.

❖ First and second degree burns smaller than the size of a quarter can usually be treated at home. Keep the area clean to prevent infection by gently washing with mild antimicrobial soap several times a day. Rinse thoroughly. Cover open areas with a clean, loose dressing. Consult with your family physician or local burn center if the burn does not heal in two to three days or if signs of infection appear.

❖ *Electrical Burns* may be caused by household current, outside power lines, certain batteries or lightning. Such burns may cause additional damage below the skin surface. In providing emergency care for persons with electrical burns, keep the following in mind:

- Protect yourself! Do not touch the victim until you are sure the power has been disconnected, the plug disconnected from the source, or the patient is free from the electricity.
- Once the victim is free from the source, treat the burns as described above.
- Electricity can cause the heart and breathing to stop. CPR may be necessary

❖ **Chemical Burns** can be caused by contact with gasoline, household cleansers, lawn products, fresh cement, or other chemicals.

- Gently brush any dry chemicals off the skin.
- Flush affected area with running water for at least 20 minutes or until an emergency worker tells you to stop. If the affected area continues to burn, continue to flush until the pain stops.
- If eyes are involved, continue to flush until help arrives.
- Remove any contaminated clothing.

❖ When Should You Seek Medical Attention?

- All burns on the face, hands, feet, major joints or genital area should be considered serious and need to be evaluated by a physician.
- All chemical and electrical burns should be seen by a physician—damage might not be immediately obvious.
- Burns occurring in an enclosed space, such as a house or car, should be evaluated because there may have been smoke inhalation.
- Burns that are white, gray, leathery, or painless should be considered serious.
- Burns bigger than the person's palm should be evaluated by a physician.

First Aid for Exposure to Gasoline

What if someone becomes ill from breathing gasoline?

The product is flammable. Take proper precautions to ensure your own safety before attempting a rescue. Remove the source of contamination or move the victim to fresh air. Perform CPR as necessary and immediately transport the victim to an emergency facility.

What if gasoline gets on someone's skin?

Avoid direct contact. Wear gloves and chemical protective clothing if necessary. Quickly and gently blot or brush away excess chemical residue. Flush with running water for a minimum of 20-30 minutes. Under running water, remove contaminated clothing and shoes. If irritation persists, repeat flushing. Obtain medical advice immediately. Completely decontaminate clothing and shoes before wearing again—or discard them.

What if someone gets gasoline in their eyes?

While holding the eye(s) open, flush the contaminated eye(s) with lukewarm, gently flowing water for 20-30 minutes. Avoid direct contact. Obtain medical advice.

What if someone swallows gasoline?

Never give anything by mouth if the victim is rapidly losing consciousness or is unconscious or convulsing. Have the victim rinse his or her mouth thoroughly with water. Have the victim drink 8-10 oz. of water. **DO NOT INDUCE VOMITING!** If vomiting occurs naturally, have the victim lean forward to reduce the risk of aspiration. Repeat administration of water. Perform CPR as necessary and immediately transport the victim to an emergency care facility.